Building Environmental Markets for a Clean Energy Future

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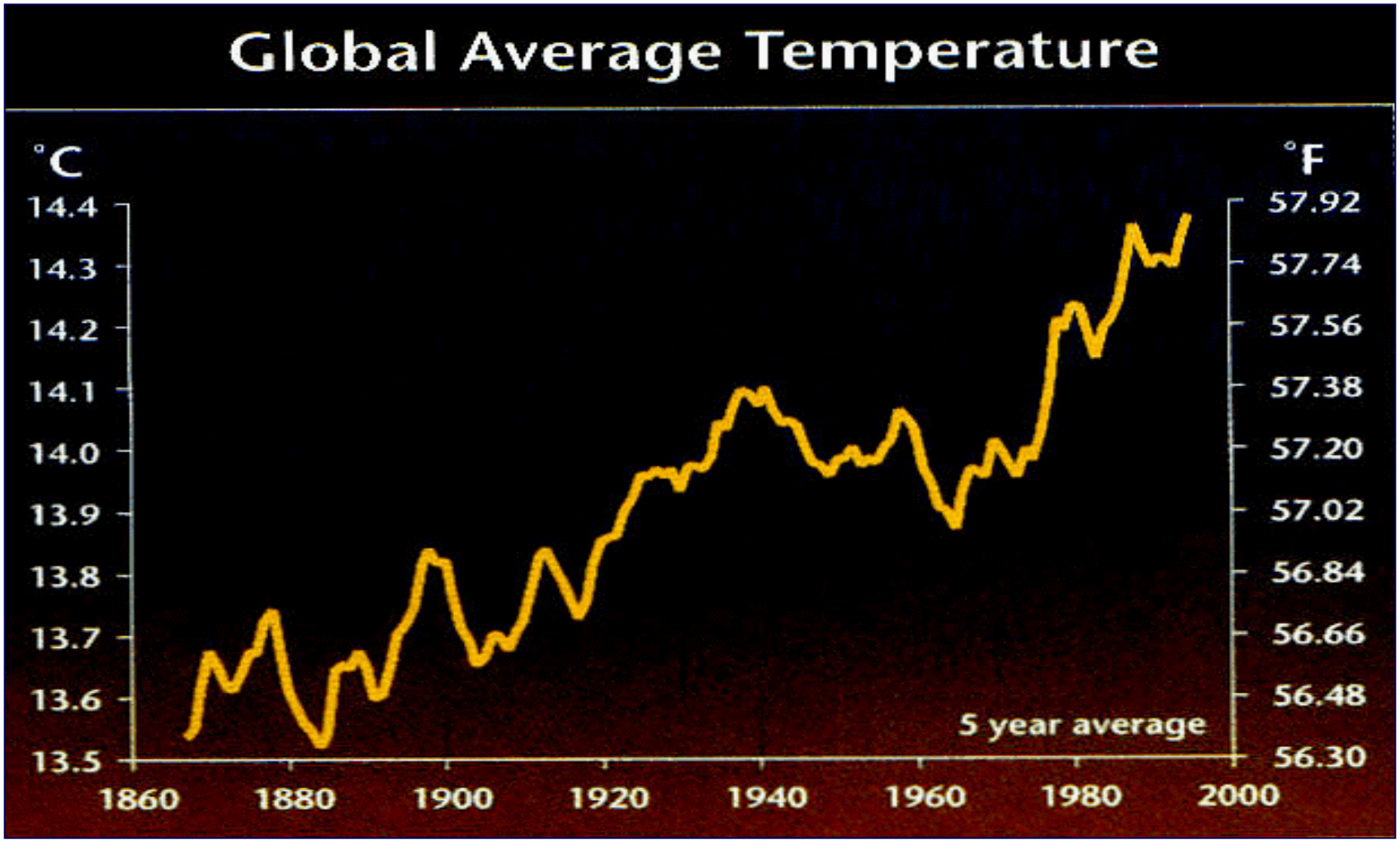
World Resources Institute

WRI is an environmental think tank
that transforms ideas into action
to protect the planet and improve people's lives

Emissions markets and renewables

- Why is including renewable energy in emissions trading important for society?
- What are the policy precedents to date?
- What are the barriers?
- Recommendations

Climate change is one of the key challenges of the 21st century

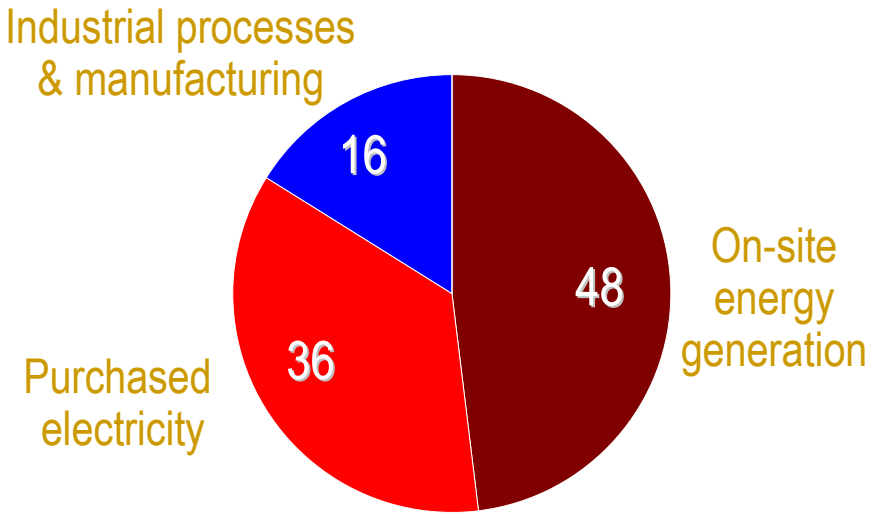


Source: "Climate Change: State of Knowledge Report," Office of Science and Technology Policy, Executive Office of the President, 1997

...and the largest source of corporate GHG emissions in the US

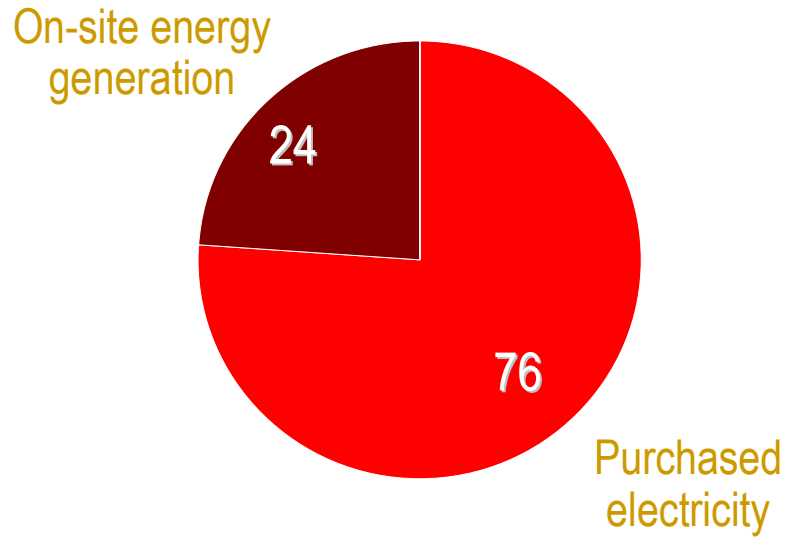
US industrial sector GHG emissions (2002)

*Percent, 100%= 1,987.2 Tg CO_2e**



US commercial sector GHG emissions (2002)

*Percent, 100%= 970.6 Tg CO_2e**



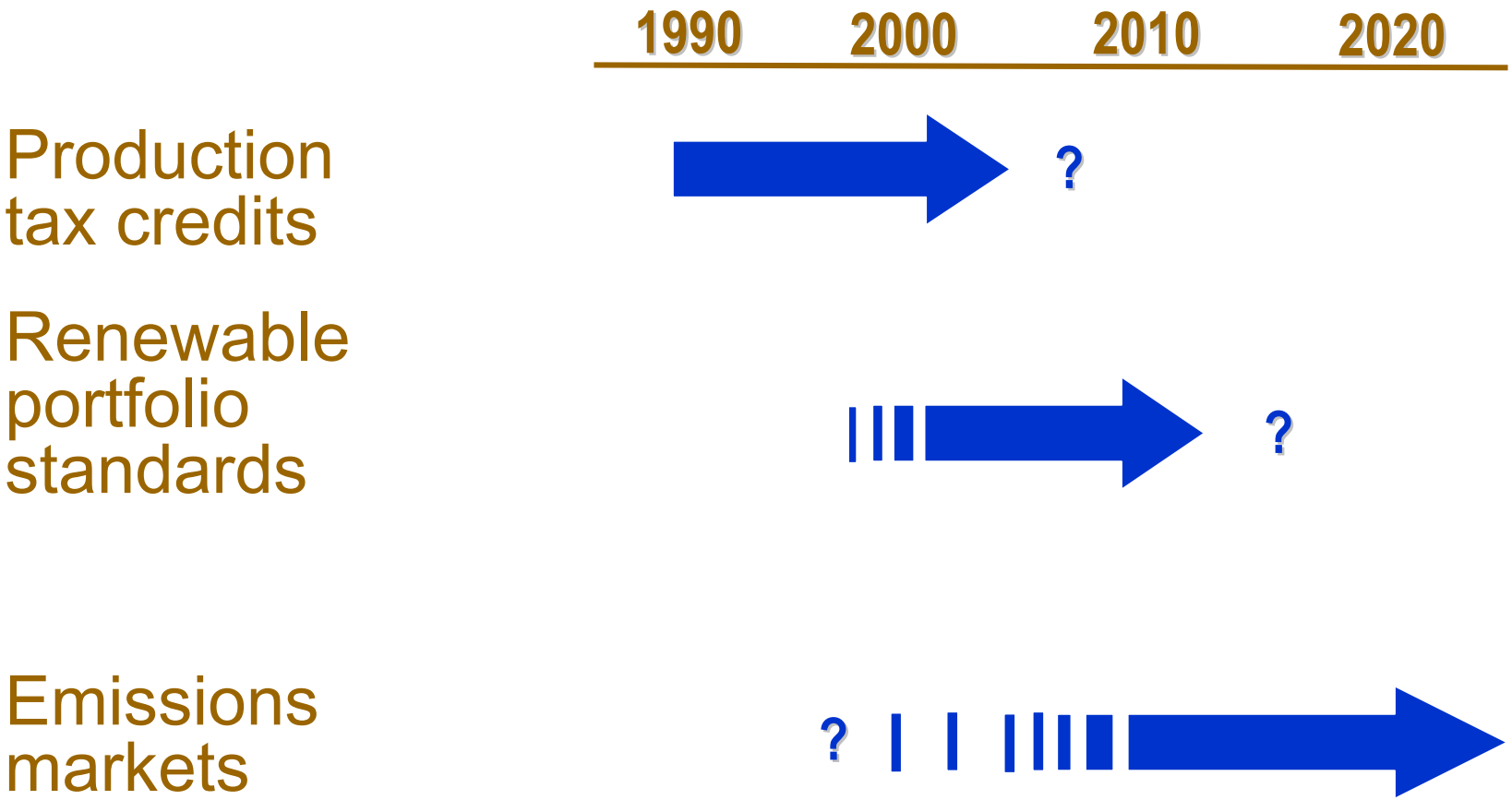
* Tg CO_2e = Teragrams of carbon dioxide equivalents

Source: US EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2002* (2004), Table ES-6. Does not include sinks.

Switching to green power is a strategy for reducing corporate GHG emissions

- Energy efficiency
- **Green power**
- Process improvements
- Carbon sequestration

Major types of policies for supporting renewable energy



Possible value of allowances

	Allowance Value	$/MWh
SO_2	$1,000/ton	$1.05
NO_x	$1,200/ton	$0.63
Mercury	$35,000/lb	$0.16
CO_2	$5/ton	$2.10

Source: Joel Bluestein, Energy and Environmental Analysis, Inc.

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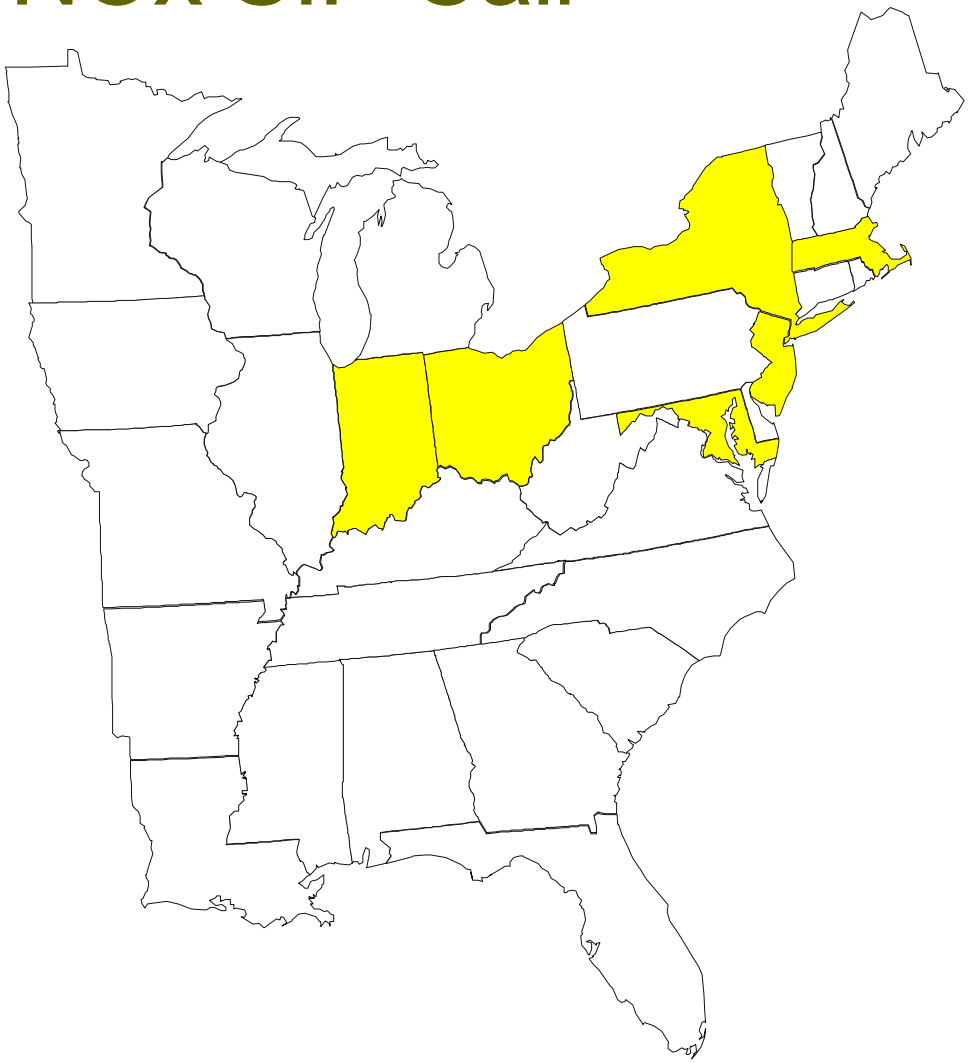
6 states with RE/EE set-aside in NOx SIP Call



State	% of 2003 Budget	NOx tons
IN	2%	1,098
MA	3%	436
MD	5%	643
NJ	5%	410
NY	3%	1,241
OH	1%	495

RGGI Regional Greenhouse Gas Initiative

An Initiative of the Northeast & Mid-Atlantic States of the U.S.

Goal

- Regional CO_2 Cap-and-Trade Program
- CO_2 Emissions from Power Plants
- April 2005 model rule for states to adopt
- Demonstrate success

Fall/Winter Activities

- Determine Cap Size and market design
- Determine State Budgets and Allocation
- State-by-State Implementation

Future Activities

- Add States to Emissions Market
- Add Offset Categories to Program Over Time
- Possible expansion: other sources and sectors

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Barrier #1: Economic theory

- "When electricity prices rise as a result of cap & trade programs, renewables will be built"
  - Not true in NO_X or SO_2 programs
  - Society unlikely to accept the rise in electricity prices required to achieve price parity today
  - Distributed locations, transmission issues, small scale projects mean existing infrastructure planning often overlooks renewable projects

Barrier #2: renewables do not emit and therefore do not require allowances

- Most cap & trade programs issue allowances on grandfathered basis – creating a valuable asset for emitters
- Emitters can then sell these allowances if they have reduction opportunities – making them MORE competitive in the short term
- Renewables excluded from economic benefits by being emissions free
- Output-based allowance allocations overcome this issue: but nuclear and large hydro benefit

Barrier #3: Renewable energy already has its policies - RPS & PTCs

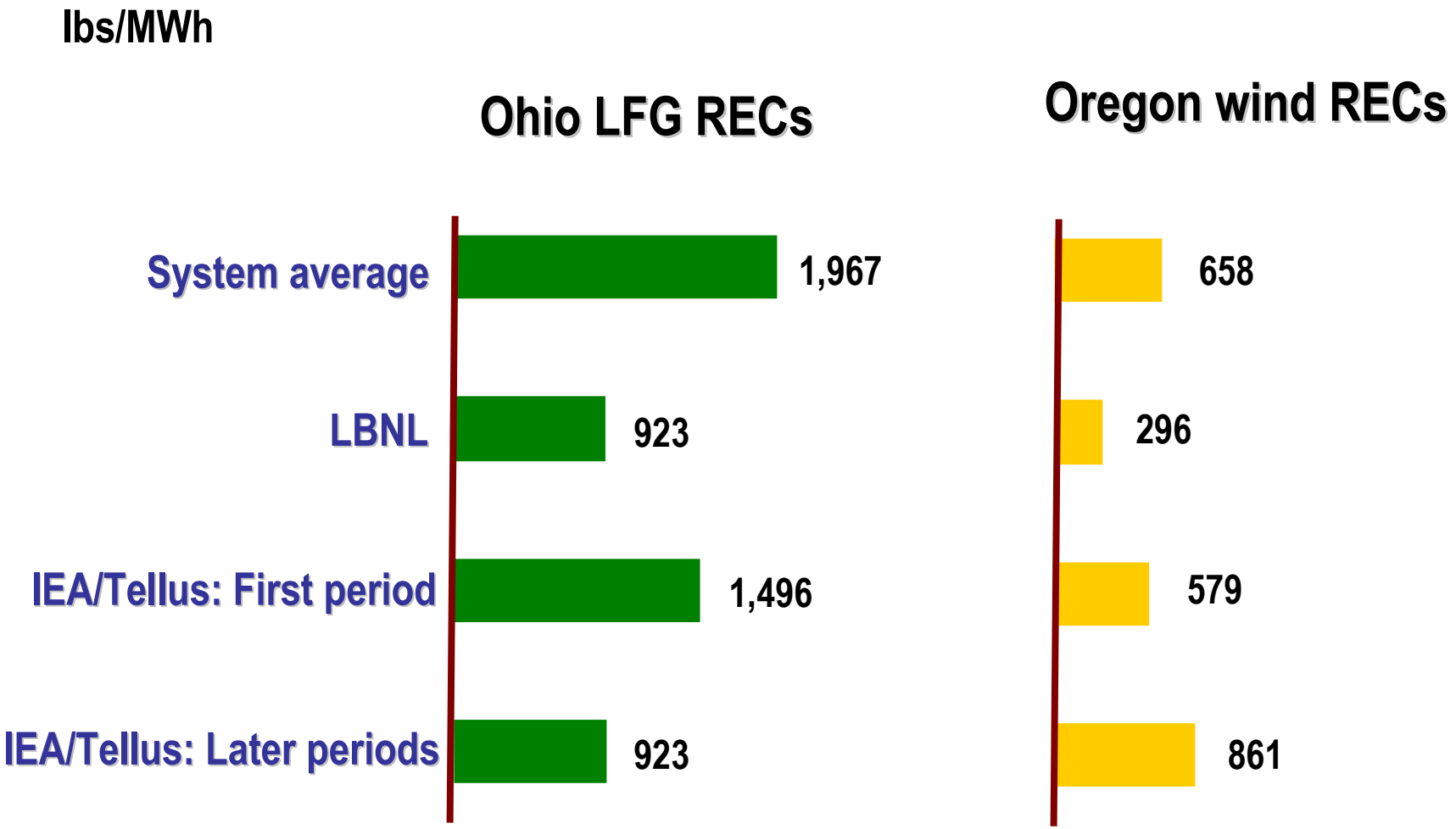
- But conventional generation has its policies too!
- Overlooks the need for rapid deployment of RE technologies needed to halt GHG emissions growth – we need it all, we need it now
- Private sector can contribute to deployment of green power technologies – if there is a business case
- Without an ability to legally claim CO_2 reductions, corporate green power markets are limited.

Barrier #4: no agreed upon calculations for the emissions value of renewable projects

	Geographic scale			Type of emissions		Temporal scale	
REC provider	State	Power pool	Nation	Average	Marginal	Annual	Other
A	X			X		X	
B		X			X		X
C		X		X		X	
D		X			X		X
E	X	X		X	X	X	X
F	X			X		X	
G			X	X		X	
H	X		X	X		X	
I	X			X		X	

Source: Interviews

Methodologies lead to quite varying results – results from WRI's 2003 RECs purchase:



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Greenhouse Gas Protocol

- Common standard
  - Widely accepted international GHG accounting and reporting standards and tools for business
- Policy penetration:
  - EU and UK Emission Trading Schemes
  - Chicago Climate Exchange
  - California Climate Action Registry
  - NE Regional Greenhouse Gas Registry (development)
- Electricity sector: avoided emissions for RE to be discussed late 2004-2005

Recommendations

- Output-based system would be good outcome – if renewables included
- If not output-based, use set-aside allowance allocation for RE/EE for in-region renewables
  - Start with 15% set aside granted on output basis
  - Require allowances be retired to make climate change claims
  - Calculate emissions value based on agreed upon protocol like WRI/WBCSD GHG Protocol
- If additional flexibility needed, have stringent offsets program for out-of-system generators

Questions?

Photo courtesy of Corey Babcock & the National Renewable Energy Laboratory